3.3 BIOLOGICAL RESOURCES

This section discusses the existing biological resources in the vicinity of the proposed project alternatives on lands administered by the U.S. Department of Agriculture Forest Service (USFS) and Bureau of Land Management (BLM), Arizona State Trust Lands, and private lands. Biodiversity, vegetation communities, wildlife, species afforded protection under the *Endangered Species Act* (ESA) of 1973, as amended, migratory birds, USFS Management Indicator Species (MIS), and USFS and BLM sensitive species, and Wildlife of Special Concern in Arizona are addressed.

3.3.1 Biodiversity

All of the proposed transmission line corridors cross a portion of an area known as the Sky Island Region, which includes portions of southern Arizona and New Mexico and northern Mexico. The term "sky island"[1] is used to describe isolated mountain ranges that are separated by grasslands or desert, which to varying degrees, are barriers to the movement of species found at higher elevations. This region is at the point of convergence of the tropical, subtropical, and temperate climatic zones. As a result, many plant and animal species' ranges overlap in this region resulting in a relatively high degree of biodiversity.

Other important local features that influence biodiversity in the region include topographic relief and geology. Precipitation increases and temperature decreases with elevation creating vertical range of habitat for various species. According to the Wildlands Project (Wildlands Project 2000), "Species with broadly similar climatic preferences or tolerances tend to sort themselves along the elevational gradient where the blend of temperature and aridity (and other factors) best supports them. This results in a stacking or layering of biotic communities varying with latitude, size, and elevation of each range."

Although numerous species in the region are considered "rare," many are at the limits of their normal range and may be more common elsewhere in the United States or Mexico. These species may or may not have been identified by the U.S. Fish and Wildlife Service (USFWS), USFS, Arizona Game and Fish Department (AGFD), or the Arizona Department of Agriculture (ADA) as requiring legal protection or requiring special management practices to prevent listing under the ESA. Plant and animal species listed for special protection or management considerations by USFWS, USFS, BLM, AGFD, and ADA are provided in Section 3.3.2, Vegetation and Wildlife. Refer to Section 3.1.1 for discussion of the Chiltipene Botanical Area within the northeastern portion of the Tumacacori Ecosystem Management Area (EMA) established by USFS as an in-situ botanical reserve. It is not possible to quantitatively distinguish the levels of biodiversity in the three corridors because no studies have been completed. Therefore, a qualitative assessment has been made.

The Tumacacori EMA, as shown in Figure 3.1–1, is part of the Coronado National Forest located in southeastern Arizona and bordered to the south by Mexico. It encompasses 203,800 acres (82,475 ha) and ranges in elevation from 3,200 to 6,200 ft (975 to 1,890 m). It is an ecologically rich area with nine distinctive vegetative community types, numerous deciduous and coniferous watersheds, and a variety of special interest plant and animal species.

[1] The term "sky island" was coined by Weldon Heald in 1967 based on his observations of the Chiricahua Mountains (Warshall 1994).

3.3.1.1 *Western, Central, and Crossover Corridors*

Biodiversity is expected to be highest in the Crossover Corridor due to diverse terrain and vegetation, relatively few disturbances, and presence of water in portions of Peck Canyon (see Figure 3.1–1). Biodiversity is expected to be high in the Western Corridor because this corridor crosses the Atascosa Mountains at a higher elevation than the Central Corridor. Biodiversity within the Central Corridor is still considered to be high due to its proximity to the Atascosa Mountains.

3.3.2 Vegetation and Wildlife

In January 2001, Harris Environmental Group completed a preliminary Biological Evaluation (BE) of the proposed corridors (HEG 2001). This preliminary BE was prepared for all three corridors and described the major vegetation communities, or biomes (Figure 3.3–1), and identified special interest species (see Section 3.3.3, Special Interest Species, for further discussion) that may potentially occur. Special interest species were subsequently evaluated in greater detail in three Biological Assessments (HEG 2003a, 2003b, 2003c) that are included as Appendices D, E, and F of this Environmental Impact Statement (EIS).

According to Harris Environmental Group, all three corridors cross the following four distinct biotic communities (Figure 3.3–1) or biomes[2] as defined by Brown (Brown 1994): (1) Sonoran Desertscrub, (2) Semidesert Grassland, (3) Madrean Evergreen Woodland, and (4) Sonoran Riparian Deciduous Forest. No wetlands were found in the proposed project corridors during field surveys conducted by Harris Environmental Group and none have been identified by USFS (USFS 2003). However, wetland vegetation may be present in portions of all corridors in small areas associated with perennial water or cattle tanks (manmade earthen dams in washes). Topography in the northern portion of the proposed corridors is relatively flat throughout the low-lying desert valleys with small rises from hills and dips from ephemeral (short-lived) washes. The elevation begins to rise in the southern portion of the proposed corridors in the Tumacacori EMA.

Arizona Upland/Sonoran Desertscrub. This biome occurs in the northern portion of all of the corridors. Vegetation typically includes saguaro (*Carnegiea gigantean*), cholla and prickly pear (*Opuntia* spp. [multiple species]) cacti, ocotillo (*Fouquieria splendens*), mesquite (*Prosopis* spp.), acacia (*Acacia* spp.) and paloverde (*Cercidium* spp.) trees. Associated shrubs within this biome include creosote bush *(Larrea tridentata),* triangle-leaf bursage (*Ambrosia deltoidea*), and brittlebush (*Encelia farinosa*) (HEG 2003a, 2003b, 2003c).

Semidesert Grassland. This biome occurs in the central portions of the corridors. This biome is typically dominated by grama grass (*Bouteloua* spp.), lovegrass (*Eragrostis* spp.), and three-awn (*Aristida* spp.) grasses. Co-dominant plant species (sharing in the controlling influence of a biotic community) include low-stature mesquite (*Prosopis* spp.) and acacia (*Acacia* spp.) trees, agave (*Agave* spp.) and yucca (*Yucca* spp.) (HEG 2003a, 2003b, 2003c).

Madrean Evergreen Woodland. This biome occurs at the upper elevations of the corridors above 3,500 ft (1,066 m) above mean sea level. Representative plants within the corridors included Mexican blue oak (*Quercus oblongifolia*) and emory oak (*Q. emoryi*) trees, side-oats grama (*Bouteloua curtipendula*) and fluff grass (*Erioneuron pulchelum*) (HEG 2003a, 2003b, 2003c).

Sonoran Riparian Deciduous Forest. This biome is located along larger washes and drainage ways such as Sopori Wash and Peck Canyon. Higher water tables in these areas typical support large stands of cottonwood (*Populus fremonti*) and willow (*Salix* spp.) trees with canopy layers greater than 50 ft (15 m) in height (HEG 2003a, 2003b, 2003c).

USFS Classified Riparian. This classification system was developed by USFS and *only* applies to riparian areas administered by USFS. Riparian areas outside lands administered by USFS are discussed above. USFS has rated riparian areas as "satisfactory" or "unsatisfactory" depending on three primary factors: (1) the percent of woody plant composition present, (2) age classes, and (3) natural shrub and tree crown cover. Watersheds rated as "unsatisfactory" in the Forest Plan (USFS 1986) are given priority for watershed improvement projects.

The area of the above vegetation types occurring in each corridor was determined using Geographic Information Systems (GIS) software (ArcInfo) to map the corridors on the Arizona Gap Analysis Vegetation Study map (1999). The length of the corridor in each biome, as calculated by ArcInfo, was multiplied by the proposed corridor width (0.25 mi [0.4 km]). The resolution of this map is adequate for analysis of areas up to approximately 98 ft (30 m). This resolution is considered sufficient for large areas such as those portions of the corridors occurring in Sonoran Desertscrub, Semidesert Grassland, and Madrean Evergreen Woodland. However, this resolution is not sufficient to adequately map small areas such as those where Sonoran Deciduous Forest occurs. Therefore, Sonoran Deciduous Forest was identified on aerial photography and the amount of this habitat present in each corridor was estimated. Harris Environmental Group confirmed these estimations by visiting areas containing Sonoran Deciduous Forest. The acreage of each vegetation type, by corridor, is provided in the following discussion.

The USFS Classified Riparian category uses vegetation classes different from those used by Harris Environmental Group and only applies to lands administered by USFS. The acreage of this vegetation in each corridor was based on GIS data provided by USFS. Although "Classified Riparian" includes "Deciduous Riparian," these areas were not mapped by Harris Environmental Group; therefore, these areas were not counted more than once.

Wildlife. No wildlife surveys were conducted in the corridors. However, diversity and densities of wildlife in all of the corridors are expected to be typical of the Sky Island region (see discussion in Section 3.3.1). Large mammals, such as mule deer, javelina, black bear, mountain lion (cougar), coyote and kit fox can be expected to occur, as well as several species of small mammals such as ground squirrel, desert cottontail, black-tailed jackrabbit, and kangaroo rat. Amphibian and reptile species expected to occur include a variety of snake, lizard, toad, and frog species. Similarly, a wide variety of birds are expected throughout all of the corridors.

3.3.2.1 *Western Corridor*

Table 3.3–1 lists the approximate acreage of each vegetation community present in the Western Corridor.

USFS Classified Riparian. On lands administered by USFS in the Western Corridor, approximately 0.8 acres (0.3 ha) of deciduous riparian, 1.1 acres (0.4 ha) of evergreen riparian, and 0.3 acres (0.1 ha) of dry desert riparian have been mapped (Table 3.3–2). Note that the "evergreen riparian" is unique to the USFS classification system in the context of this EIS. Furthermore, this vegetation type is not found

outside national forest lands in any of the alternatives, and therefore, not analyzed for other land administration or ownerships.

Table 3.3–1. Biotic Communities Present in the Western Corridor.

Vegetation Type	Entire Corridor (acres)	Coronado National Forest (acres)	Lands Administered by the BLM (acres)	All Other Land Ownership (acres)
AZ Upland/Sonoran Desertscrub	548	0	0	548
Semidesert Grassland	7,350	2,640	82	4,628
Madrean Evergreen Woodland	2,070	2,070	0	0
Sonoran Riparian Deciduous Forest	0.9	0.8	0	<0.1
Disturbed (agriculture, urban, or unvegetated)	634	0	0	634
USFS Classified Riparian	NA	2	NA	NA
TOTAL	10,603	4,713	82	5,810

NA = not applicable.

Table 3.3–2. USFS Classified Riparian Areas in the Western Corridor.

Vegetation Type	Area (acres)	Area Name	Condition[a]
Deciduous Riparian	0.2	East Fork Apache	Unsatisfactory
Deciduous Riparian	0.3	Sycamore	Satisfactory
Deciduous Riparian	0.3	Peña Blanca	Satisfactory
Evergreen Riparian	1.0	Peña Blanca	Satisfactory
Evergreen Riparian	0.1	Alamo	Unsatisfactory
Dry Desert Riparian	0.3	Alamo	Unsatisfactory

[a] Note that these ratings may be biased so that dry desert riparian vegetation types are more likely to be rated as unsatisfactory due to infrequent water flows.

3.3.2.2 *Central Corridor*

Table 3.3–3 lists the approximate acreage of each vegetation community present in the Central Corridor.

Table 3.3–3. Biotic Communities Present in the Central Corridor.

Vegetation Type	Entire Corridor (acres)	Coronado National Forest (acres)	Lands Administered by the BLM (acres)	All Other Land Ownership (acres)
AZ Upland/Sonoran Desertscrub	548	0	0	548
Semidesert Grassland	7,634	2,226	82	5,326
Madrean Evergreen Woodland	180	180	0	0
Sonoran Riparian Deciduous Forest	4.4	4.4	0	<0.1
Disturbed (agriculture, urban, or unvegetated)	748	0	0	748
USFS Classified Riparian	4	4	NA	NA
TOTAL	9,118	2,414	82	6,622

NA = not applicable.

USFS Classified Riparian. On lands administered by USFS in the Central Corridor, approximately 0.9 acres (0.4 ha) of deciduous riparian, 0.9 acres (0.4 ha) of evergreen riparian, and 2.2 acres (0.9 ha) of dry desert riparian have been mapped (Table 3.3–4).

Table 3.3–4. USFS Classified Riparian Areas in the Central Corridor.

Vegetation Type	Area (acres)	Area Name	Condition
Deciduous Riparian	0.1	Rock Corral	Unsatisfactory
Deciduous Riparian	0.8	Agua Fria	Satisfactory
Evergreen Riparian	0.9	Peck	Satisfactory
Dry Desert Riparian	1.3	Negro	Not rated
Dry Desert Riparian	0.6	Tinaja	Not rated
Dry Desert Riparian	0.3	Lost Dog	Not rated

3.3.2.3 *Crossover Corridor*

Table 3.3–5 lists the approximate acreage of each vegetation community present in the Crossover Corridor.

Table 3.3–5. Biotic Communities Present in the Crossover Corridor.

Vegetation Type	Entire Corridor (acres)	Coronado National Forest (acres)	Lands Administered by the BLM (acres)	All Other Land Ownership (acres)
AZ Upland/Sonoran Desertscrub	548	0	0	548
Semidesert Grassland	8,847	4,136	82	4,629
Madrean Evergreen Woodland	572	572	0	0
Sonoran Riparian Deciduous Forest	4.4	4.4	0	<0.1
Disturbed (agriculture, urban, or unvegetated)	634	0	0	634
USFS Classified Riparian	48	48	NA	NA
TOTAL	10,653	4,760	82	5,811

NA = not applicable.

USFS Classified Riparian. On lands administered by USFS in the Crossover Corridor, approximately 1.3 acres (0.5 ha) of deciduous riparian, 13.3 acres (5.4 ha) of evergreen riparian, and 33.6 acres (13.5 ha) of dry desert riparian have been mapped (Table 3.3–6).

Table 3.3–6. USFS Classified Riparian Areas in the Crossover Corridor.

Vegetation Type	Area (acres)	Area Name	Condition
Deciduous Riparian	1.3	East Fork Apache	Unsatisfactory
Evergreen Riparian	13.3	Peck	Satisfactory
Dry Desert Riparian	19.3	Negro	Not rated
Dry Desert Riparian	9.5	Tinaja	Not rated
Dry Desert Riparian	4.8	Lost Dog	Not rated

3.3.3 Special Interest Species

Special interest species include those species that are listed or being considered for listing as threatened or endangered by USFWS (Federal endangered, threatened, proposed, or candidate species); or that are given sensitive species status by USFS or BLM; or that are considered Wildlife of Special Concern in Arizona by the AGFD; or listed by the ADA.

Federally listed threatened and endangered species, and their designated critical habitat, are afforded protection under the ESA. Potential impacts to threatened and endangered species are evaluated for every land jurisdiction under each alternative. Impacts to species that are proposed to be listed, or are candidates for listing, are also evaluated in case they are listed during the *National Environmental Policy Act* (NEPA) process. USFS and BLM Sensitive species are evaluated within their respective land jurisdiction under each alternative. Species designated as Wildlife of Special Concern in Arizona and plants listed by the ADA are not afforded status on Federal lands. However, both USFS and BLM consider potential impacts to these species during any NEPA process.

The USFS Sensitive category as reported in this document includes all federally protected and candidate species, plus species formerly included on USFWS Category 2 candidate species list (now discontinued, USFWS 1996). The USFS Sensitive status does not confer legal protection of a species; however, it does

identify species that may need special management consideration to prevent population declines, which could necessitate listing under the ESA. USFS Sensitive species are defined (FSM 2607.5) as "those plant and animal species identified by the regional Forester for which population viability is a concern, as evidenced by:

a. Significant current or predicted downward trends in population numbers or density, or

b. Significant current or predicted downward trends in habitat capability that would reduce a species existing distribution."

Criteria for BLM Sensitive Species include those that are:

a. Under status review by the USFWS,

b. Whose numbers are declining so rapidly that Federal listing may become necessary,

c. Typically small and widely dispersed populations, or

d. Inhabiting ecological refugia (a type of sensitive and relatively unaltered habitat) or other specialized habitats.

Designation as a Wildlife of Special Concern in Arizona species protects a species in the State of Arizona against take (harm or harassment) as authorized under Arizona statute ARS Title 17-309. Plants listed by the ADA are regulated under the Arizona Native Plant Law.

Harris Environmental Group completed a preliminary BE for the entirety of all of the proposed corridors (HEG 2001). Subsequently, Harris Environmental Group completed a draft Biological Assessments for the entirety of each of the action alternatives (the Western, Central, and Crossover Corridors, contained in Appendices D, E, and F, respectively) (HEG 2003a, 2003b, 2003c). During the preparation of the Biological Assessment, Harris Environmental Group contacted USFWS, AGFD (which queried Heritage Data Management System), USFS, and BLM to obtain updated records and information of potential habitat of special-interest species for Pima and Santa Cruz Counties.

A total of 99 special interest species were identified by the above-referenced agencies as potentially occurring in the corridors (HEG 2003a, 2003b, 2003c) (Table 3.3–7). The Harris Environmental Group evaluated all 28 species listed by USFWS (Table 3.3–8), 40 USFS Sensitive, 13 BLM Sensitive, 12 Wildlife Species of Concern in Arizona, and 6 Arizona Department of Agriculture species. No federally designated Critical Habitat or proposed designated Critical Habitat, as defined in the ESA, is present in any of the corridors. The Western Corridor crosses a portion of the Sycamore Canyon watershed upstream of Critical Habitat for Sonora chub.

Table 3.3–7. Comparison of Special Interest Species Potentially Occurring in Each of the Corridors.

Special-Interest Species	Corridor[a]		
	Western	Central	Crossover
Federal Threatened and Endangered Species			
Plants			
Canelo Hills Ladies' Tresses	-	-	-
Huachuca Water Umbel	-	-	-
Kearney's Blue Star	-	-	-

Table 3.3–7. Comparison of Special Interest Species Potentially Occurring in Each of the Corridors *(continued).*

Special-Interest Species	Corridor[a]		
	Western	Central	Crossover
Nichol's Turk's Head Cactus	-	-	-
Pima Pineapple Cactus	X	X	X
Mammals			
Jaguar	X	X	X
Jaguarundi	-	-	-
Lesser Long-nosed Bat	X	X	X
Mexican Gray Wolf	X	X	X
Sonoran Pronghorn	-	-	-
Ocelot	-	-	-
Birds			
Cactus Ferruginous Pygmy-owl	X	X	X
Masked Bobwhite	-	-	-
Northern Aplomado Falcon	-	-	-
Southwestern Willow Flycatcher	X	X	X
Bald Eagle	-	-	-
Brown Pelican	-	-	-
Yellow-billed Cuckoo	X	X	X
Mexican Spotted Owl	X	-	X
Mountain Plover	-	-	-
Amphibians			
Sonoran Tiger Salamander	-	-	-
Chiricahua Leopard Frog	X	-	X
Fish			
Loach Minnow	-	-	-
Desert Pupfish	-	-	-
Gila Topminnow	X	X	X
Sonora Chub	X	-	-
Spikedace	-	-	-
Gila Chub	-	-	-
USFS Sensitive			
Plants			
Alamos Deer Vetch	X	X	X
Arid Throne Fleabane	X	X	X
Arizona Giant Sedge	X	X	X
Bartram's Stonecrop	X	X	X
Beardless Chinch Weed	X	X	X
Broad-leaf Ground Cherry	-	X	X
Catalina Beardtongue	X	X	X
Chihuahuan Sedge	X	X	X
Chiltepine	X	X	X
Chiricahua Mt. Brookweed	X	X	X
Foetid Passionflower	X	X	X
Gentry Indigo Bush	X	X	X

Table 3.3–7. Comparison of Special Interest Species Potentially Occurring in Each of the Corridors *(continued).*

Special-Interest Species	Corridor[a]		
	Western	**Central**	**Crossover**
Large-Flowered Blue Star	X	X	X
Lumholtz Nightshade	X	X	X
Mock-Pennyroyal	X	X	X
Nodding Blue-eyed Grass	X	X	X
Northern Gray Hawk	X	X	X
Pima Indian Mallow	-	X	X
Santa Cruz Beehive Cactus	X	X	X
Santa Cruz Star Leaf	X	X	X
Santa Cruz Striped Agave	X	X	X
Seeman Groundsel	X	X	X
Sonoran Noseburn	X	X	X
Superb Beardtongue	X	X	X
Supine Bean	X	X	X
Sweet Acacia	X	X	X
Three-nerved scurf-pea	-	-	X
Thurber Hoary Pea	X	X	X
Thurber's Morning-glory	X	X	X
Virlet Paspalum	X	X	X
Weeping Muhly	X	X	X
Wiggins Milkweed Vine	X	X	X
Wooly Fleabane	X	X	X
Mammals			
Cave Myotis	X	X	X
Southern Pocket Gopher	X	X	X
Birds			
Five-Stripped Sparrow	X	X	X
American Peregrine Falcon	X	X	X
Yellow-billed Cuckoo	X	X	X
Amphibians			
Lowland Leopard Frog	X	X	X
Western Barking Frog	X	X	X
Reptiles			
Giant Spotted Whiptail	X	X	X
Mexican Garter Snake	X	X	X
Invertebrates			
Arizona Metalmark	X	X	X
BLM Sensitive			
Plants			
Balloonvine	X	X	X
False Grama	X	X	X
Tumamoc Globeberry	X	X	X
Mammals			
California Leaf-nosed Bat	X	X	X

Table 3.3–7. Comparison of Special Interest Species Potentially Occurring in Each of the Corridors *(continued).*

Special-Interest Species	Corridor[a]		
	Western	Central	Crossover
Underwood's Mastiff Bat	X	X	X
Fringed Myotis	X	X	X
Pocketed Free-Tailed Bat	X	X	X
Big Free-Tailed Bat	X	X	X
Spotted Bat	X	X	X
Birds			
Western Burrowing Owl	X	X	X
Loggerhead Shrike	X	X	X
Rufuos-winged sparrow	X	X	X
Reptiles			
Texas Horned Lizard	X	X	X
Wildlife of Special Concern In Arizona			
Mammals			
Mexican Long-tongued Bat	X	X	X
Californian Leaf-nosed Bat	X	X	X
Birds			
Black-bellied Whistling Duck	X	X	X
Elegant Trogon	X	X	X
Osprey	X	X	X
Crested Caracara	X	X	X
Thick-billed Kingbird	X	X	X
Rose-throated Becard	X	X	X
Tropical Kingbird	X	X	X
Amphibians			
Great Plains Narrow-mouthed Toad	X	X	X
Reptiles			
Desert Tortoise (Sonoran)	X	X	X
Mexican Vine Snake	X	X	X
Arizona Department of Agriculture Plants			
Bartram's Stonecrop	X	X	X
Gentry Indigo Bush	X	X	X
Santa Cruz Striped Agave	X	X	X
Catalina Beardtongue	X	X	X
Santa Cruz Beehive Cactus	X	X	X
Pima Indian Mallow	-	X	X

[a] An X in the "Corridor" denotes that a special interest species may potentially occur in that corridor.
Note: "-" denotes no potential occurrence of Special Interest Species.
Source: HEG 2003a, 2003b, 2003c.

Table 3.3–8. Federally Listed Species Potentially Occurring in Pima and Santa Cruz Counties.

Common Name	Status [a]	Corridor Species May Occur in:	Preferred Habitat
Plants			
Canelo Hills Ladies' Tresses	E	None	Occurs in finely grained, highly organic, saturated soils of Cienegas below 5,000 ft. Known range is located well outside the three corridors.
Huachuca Water Umbel	E	None	Cienegas, perennial low gradient streams, and wetlands between 3500-6500 ft
Kearney's Blue Star	E	None	Known only from west-facing drainages in the Baboquivari Mountains.
Nichol's Turk's Head Cactus	E	None	Found in unshaded microsites in Sonoran desertscrub on dissected alluvial fans at the foot of limestone mountains.
Pima Pineapple Cactus	E	All	Occurs in alluvial basins or on hillsides in Semidesert Grassland in a wide range of soils on land with less than 10-15% slope.
Mammals			
Jaguar	E	All	Typically occurs in large canyon bottoms where surface water occurs and is also found in Sonoran Desertscrub up through subalpine conifer forest.
Jaguarundi	E	None	Occurs in humid tropical and sub-tropical forests, savannahs, and semi-arid thornscrub.
Lesser Long-nosed Bat	E	All	Desertscrub habitat with agave and columnar cacti present as food plants; day roosts in caves and abandoned tunnels.
Mexican Gray Wolf	E	None (however, potentially suitable habitat is present in all three corridors)	Historically occurred in chaparral, woodland, and forested areas. Only known population is an "experimental nonessential population" introduced in the Blue Primitive Area in eastern Arizona.
Ocelot	E	None	Occurs in humid tropical and sub-tropical forests, savannahs, and semi-arid thornscrub.
Sonoran Pronghorn	E	None	Found in broad intermountain alluvial valleys with creosote-bursage and palo verde-mixed cacti associations. Known range is located well outside the three corridors.
Birds			
Cactus Ferruginous Pygmy-owl	E	All	Mature cottonwood/willow, mesquite bosque, and Sonoran Desertscrub.
Masked Bobwhite	E	None	Desert grasslands with diversity of dense native grasses, forbs, and brush. Presently only known from reintroduced populations on Buenos Aires National Wildlife Refuge. Known range is located well outside the three corridors.

Table 3.3–8. Federally Listed Species Potentially Occurring in Pima and Santa Cruz Counties *(continued).*

Common Name	Status [a]	Corridor Species May Occur in:	Preferred Habitat
Northern Aplomado Falcon	E	None	Occurs in grassland and savannah. Known range is located well outside the three corridors.
Southwestern Willow Flycatcher	E	All	Occurs and nests in dense riparian habitats along streams where cottonwood, willow, boxelder, tamarisk are present.
Bald Eagle	T	None	Large trees or cliffs near water (reservoirs, rivers, and streams) with abundant prey.
Brown Pelican	T	None	Coastal land and islands; species found around many Arizona lakes and rivers
Mexican Spotted Owl	T	Western Crossover	Occurs in mature forest and woodland, shady wooded canyons and steep canyons.
Mountain Plover	P	None	Sporadically occurs in open arid plains, short-grass prairies, and cultivated farms.
Yellow-billed Cuckoo	C	All	Occurs in riparian areas dominated by tall cottonwood and willow trees.
Fish			
Desert Pupfish	E	None	Occurs below 5,000 ft. in shallow springs, small streams, and marshes. Tolerates saline and warm water. Known range is located well outside the three corridors.
Gila Topminnow	E	All	In Arizona, most of the remaining populations occur in the Santa Cruz River system.
Loach Minnow	T	None	A benthic species of small to large perennial streams with swift shallow water over cobble and gravel.
Sonora Chub	T	Western	Occurs in perennial and intermittent small to moderate streams with boulders and cliffs.
Spikedace	T	None	Occurs in moderate to large perennial streams with gravel cobble substrates and moderate to swift velocities over sand and gravel substrates.
Amphibians			
Sonoran Tiger Salamander	E	None	Lives in moist or damp areas such as rodent burrows and rotting logs. Breeds in stock tanks. Known range is located well outside the three corridors.
Chiricahua Leopard Frog	T	Western Crossover	Typically occurs in a wide variety of water sources in deserts, grasslands, chaparral, and oak woodlands.

[a] USFWS Endangered (E), Threatened (T), Proposed (P), Candidate (C).
Source: HEG 2003a, 2003b, 2003c.

Detailed evaluations of threatened and endangered species are provided in the Biological Assessments in Appendices D, E, and F.

3.3.3.1 *Western Corridor*

According to the Harris Environmental Group (2003a), ten species listed under the ESA could potentially be impacted under this alternative. Relative to the Western Corridor, either: (1) these species are known to occur, (2) these species have the potential to occur, (3) suitable habitat exists, or (4) these species could be indirectly impacted. Below is the status, a description and distribution of the species, relative to the Western Corridor.

Cactus Ferruginous Pygmy-owl (Endangered). Habitat for cactus ferruginous pygmy-owl, as defined by the USFWS, is present throughout the majority of the Western Corridor. However, no cactus ferruginous pygmy-owl are known to occur in the Western Corridor and none were detected during surveys by biologists at 142 call points in 2001 and 140 call points in 2002 (HEG 2003a). Historically cactus ferruginous pygmy-owl have been known to occur in the Nogales Ranger district in Sycamore Canyon (HEG 2003a), but USFS surveys in 1997 and 1998 failed to detect any individuals. In 1999 USFS biologists conducted 58 cactus ferruginous pygmy-owl habitat assessments in the Tumacacori EMA and identified four areas west and southwest of all of the corridors that warranted cactus ferruginous pygmy-owl surveys. As a result, approximately 2,300 acres (931 ha) were surveyed. No cactus ferruginous pygmy-owl was detected in these four areas (HEG 2003a).

Chiricahua Leopard Frog (Threatened). Chiricahua leopard frogs are known to presently occur at four locations within the Tumacocori EMA and there are 17 historical records in the Pajarito and Atascosa Mountains (HEG 2003a). None of these populations are located in the Western Corridor. No surveys for Chiricahua leopard frog have been completed in the Western Corridor.

Gila Topminnow (Endangered). Gila topminnows are currently known from 14 natural locations in Arizona. Historically, this species occurred in the Santa Cruz River and other major drainages throughout Arizona and Mexico. The nearest known present-day population is approximately 12 mi (19 km) northeast of Nogales, Arizona (approximately 12 mi [19 km] east of any of the corridors). No Gila topminnow occur in the Tumacacori EMA (HEG 2003a), or any other portion of the Western Corridor, and there are no plans for introductions in any locations.

Jaguar (Endangered). Jaguars have been documented with 2 mi (3.2 km) of the Western Corridor. It is likely that resident breeding populations occurred in the southwestern United States into the 20th century; however, there are presently no known breeding populations of jaguar in the United States. There have been numerous confirmed and unconfirmed sightings during the 1980s and 1990s of individuals along the Arizona-Mexico border. The most recent sightings of jaguar occurred in the Tumacacori EMA and this area is the most likely to provide habitat and support the future existence of this species in the United States (HEG 2002a). It is unknown how many, if any, jaguar occur the southwestern United States year round. Jaguars typically inhabit large canyon bottom habitats with surface water but occur in a wide variety of habitats.

Lesser Long-nosed Bat (Endangered). No lesser long-nosed bat roosts are known to exist in the Western Corridor. However, numerous caves, crevices, and abandoned mines, which may be suitable lesser long-nosed bat roosts, are present in the Tumacocori-Atascosa Mountains (HEG 2003a). The Corridor is within foraging distance of two known roost sites in southern Arizona and food plants (agave and saguaro) are present throughout portions of the Western Corridor.

Mexican Gray Wolf (Endangered). Mexican gray wolves are believed to have been extirpated (killed off completely) from Arizona by 1960 and from Mexico by 1980 by intensive predator control programs (Hoffmeister 1986). Historically, this species inhabited most non-desert areas above 4,000 ft (1,220 m) in oak, pine/juniper savannahs, and mixed conifer woodlands (USFWS 1998). In 1907, 45 wolves were

killed in several southern Arizona mountain ranges. USFWS is in the process of re-establishing "a wild population" of at least 100 Mexican wolves in the Blue Range in Arizona. Mexican gray wolf may have historically occurred in portions of the Western Corridor.

Mexican Spotted Owl (Threatened). There are five Protected Activity Centers in the Tumacacori EMA (HEG 2003a). Although the Western Corridor does not cross any Protected Activity Centers, it is within 1 mi (1.6 km) of two different Protected Activity Centers south of Ruby Road. Much of the remaining Western Corridor lacks habitat for Mexican spotted owl.

The USFWS proposed to re-designate Mexican spotted owl critical habitat in 2000 after the courts revoked the critical habitat designated in 1995. The 2000 proposed critical habitat included 13.5 million acres (5.6 million ha) of land mostly administered by USFS. The southern portion of the Western Corridor crosses approximately 8 mi (13 km) of the critical habitat proposed in 2000 (*Federal Register* Volume 65, No. 141, July 21, 2000, p. 45336). The final rule published on February 1, 2001, did not designate critical habitat on national forest land in Arizona. The reason given for not designating critical habitat on national forest lands was that current Forest Plans conform to management guidelines outlined in the USFWS Recovery Plan for the Mexican spotted owl (USFWS 1995). On January 13, 2003, a Federal judge stated that the final rule designating critical habitat for Mexican spotted owl violated the ESA. Subsequent court orders have mandated the USFWS to re-propose critical habitat for Mexican spotted owl within nine months (October 13, 2003) and publish a final designation within 15 months (April 13, 2004). At the time of the preparation of this Draft EIS no critical habitat for Mexican spotted owl exists in the Western Corridor.

Pima Pineapple Cactus (Endangered). Pima pineapple cacti occur in patches throughout most of the northern portion of the Western Corridor. A total of 70 Pima pineapple cactus were located during surveys conducted from July 17, 2002, through March 31, 2003 (HEG 2003a). Within the Western Corridor, Pima pineapple cacti were located only between the forest boundary and the South Substation. Of the 70 Pima pineapple cacti found in the Western Corridor, three were found on the BLM land (two were within the proposed 125-ft [38.1-m] right-of-way [ROW]).

Southwestern Willow Flycatcher (Endangered). Southwestern willow flycatchers are not known to occur in the Western Corridor. However, Harris Environmental Group (2003a) identified potential habitat (that is, broad-leaved deciduous riparian habitat) where the Western Corridor crosses Sopori Wash. Individuals could use this area during migration but not for breeding.

Sonora Chub (Threatened). No Sonora chubs are known to occur within the Western Corridor. However, populations are known to occur in several streams and springs within the Tumacacori EMA and critical habitat have been designated approximately 1 mi (1.6 km) downstream of the Western Corridor. Sonora chub populations fluctuate widely in response to wet/dry periods. This species expands from pools into runs and riffles as they become available during rainy seasons.

USFS Sensitive Species. Forty USFS Sensitive Species were identified as potentially occurring in the Western Corridor (HEG 2003a) (see the following list). A description of these species and habitat requirements can be found in the Biological Assessment for the Western Corridor, Appendix D.

Plants		
Alamos Deer Vetch	Gentry Indigo Bush	Supine Bean
Arid Throne Fleabane	Large-Flowered Blue Star	Superb Beardtongue
Arizona Giant Sedge	Lumholtz Nightshade	Sweet Acacia
Bartram's Stonecrop	Mock-Pennyroyal	Thurber Hoary Pea
Beardless Chinch Weed	Nodding Blue-eyed Grass	Thurber's Morning-glory
Catalina Beardtongue	Santa Cruz Beehive Cactus	Virlet Paspalum
Chihuahuan Sedge	Santa Cruz Star Leaf	Weeping Muhly
Chiltepene	Santa Cruz Striped Agave	Wiggins Milkweed Vine
Chiricahua Mt. Brookweed	Seeman Groundsel	Wooly Fleabane
Foetid Passionflower	Sonoran Noseburn	
Mammals		
Cave Myotis	Southern Pocket Gopher	
Birds		
American Peregrine Falcon	Northern Gray Hawk	Yellow-billed Cuckoo
Five-Stripped Sparrow		
Reptiles/Amphibians		
Giant Spotted Whiptail	Lowland Leopard Frog	Mexican Garter Snake
Western Barking Frog		
Invertebrates		
Arizona Metalmark		

BLM Sensitive Species. Thirteen BLM Sensitive species were identified as potentially occurring in the Western Corridor (HEG 2003a) (see the following list). A description of these species and habitat requirements can be found in the Biological Assessment for the Western Corridor, Appendix D.

Plants		
Balloonvine	False Grama	Tumamoc Globeberry
Mammals		
Big Free-Tailed Bat	Californian Leaf-nosed Bat	Fringed Myotis
Pocketed Free-Tailed Bat	Spotted Bat	Underwood's Mastiff Bat
Birds		
Rufus-winged sparrow	Loggerhead Shrike	Western Burrowing Owl
Reptiles		
Texas Horned Lizard		

Wildlife of Special Concern In Arizona. Twelve AGFD Wildlife of Special Concern in Arizona were identified as potentially occurring in the Western Corridor (HEG 2003a) (see the following list). A description of these species and habitat requirements can be found in the Biological Assessment for the Western Corridor, Appendix D.

Mammals		
Californian Leaf-nosed Bat	Mexican Long-tongued Bat	
Birds		
Black-bellied Whistling Duck	Crested Caracara	Elegant Trogon
Osprey	Thick-billed Kingbird	Tropical Kingbird
Rose-throated Becard Great Plains		
Reptiles/Amphibians		
Desert Tortoise (Sonoran)	Mexican Vine Snake	Narrow-mouthed Toad

Arizona Department of Agriculture Plants. Five plants afforded protection under the Arizona Native Plant Law were identified as potentially occurring in the Western Corridor (see the following list). Plants that are classified as "Salvage Restricted" are plants that have a high potential for theft or vandalism of the whole plant. Collection, salvage, or harvesting requires permitting from the ADA. Plants that are classified as "Highly Safeguarded" are those species of native plants and parts of plants, including the seeds and fruit, whose prospects for survival in Arizona are in jeopardy or which are in danger of extinction.

Common Name	Status
Bartram's Stonecrop	Salvage Restricted
Catalina Beardtongue	Highly Safeguarded
Gentry Indigo Bush	Highly Safeguarded
Santa Cruz Beehive Cactus	Highly Safeguarded
Santa Cruz Striped Agave	Highly Safeguarded

3.3.3.2 *Central Corridor*

According to the Harris Environmental Group (2003b), seven federally listed species could potentially be impacted under this alternative. These species include: cactus ferruginous pygmy-owl, Pima pineapple cactus, southwestern willow flycatcher, lesser long-nosed bat, jaguar, Gila topminnow, and Mexican gray wolf. With the exception of Pima pineapple cactus, descriptions of these species, their status, and distribution are provided above. The distribution of Pima pineapple cactus within the Central Corridor is provided below. Although it is considered unlikely that Mexican spotted owl occur in the Central Corridor, formerly proposed critical habitat is located within a portion of the Central Corridor. Therefore, Mexican spotted owl is also discussed below.

Mexican Spotted Owl (Threatened). Much of the Central Corridor lacks habitat for Mexican spotted owl. However, the Central Corridor crosses approximately 2 mi (3.2 km) of the critical habitat proposed in 2000. At the time of the preparation of this EIS no critical habitat for Mexican spotted owl exists in the Central Corridor.

Pima Pineapple Cactus (Endangered). Pima pineapple cacti occur in patches throughout most of the Central Corridor. A total of 78 Pima pineapple cacti were located during surveys conducted from July 17, 2002 through March 31, 2003 (HEG 2003a). Within the Central Corridor, Pima pineapple cacti were only between the forest boundary and the South Substation. Of the 78 Pima pineapple cacti found in the Central Corridor, three were found on the BLM land (two were within the proposed 125-ft [38.1 m] ROW).

USFS Sensitive Species. Forty-two USFS Sensitive Species were identified as potentially occurring in, or within 3 mi (4.8 km) of the Central Corridor (HEG 2003b). In addition to those species listed above under Section 3.3.3.1, Pima Indian mallow and broad-leaf ground cherry potentially occur in the Central Corridor. A description of these species and habitat requirements can be found in the Biological Assessment for the Central Corridor, Appendix E.

BLM Sensitive Species. BLM Sensitive Species are identical to those addressed in Section 3.3.3.1 (HEG 2003b).

Wildlife of Special Concern In Arizona. Wildlife of Special Concern in Arizona species are identical to those addressed in Section 3.3.3.1 (HEG 2003b).

Arizona Department of Agriculture Plants. In addition to the five ADA plants listed under Section 3.3.3.1, Pima Indian mallow may occur in the Central Corridor. Pima Indian mallow is considered "Salvage Restricted" under the Arizona Native Plant Law (HEG 2003b).

3.3.3.3 *Crossover Corridor*

According to the Harris Environmental Group (2003c), nine federally listed species could potentially be impacted under this alternative. These species include: Pima pineapple cactus, cactus ferruginous pygmy-owl, Mexican spotted owl, southwestern willow flycatcher, lesser long-nosed bat, jaguar, Gila topminnow, Chiricahua leopard frog, and Mexican gray wolf. With the exception of Mexican spotted owl, the descriptions of these species, their status, and distribution are provided above under Section 3.3.3.1. The survey results for Pima pineapple cactus are identical to those under Section 3.3.3.1 because all of the individuals found were located within the portion of the Crossover Corridor shared with the Western Corridor.

Mexican Spotted Owl (Threatened). There is one Protected Activity Center within 0.6 mi (0.9 km) of the Crossover Corridor near Peck Canyon (HEG 2003c). Much of the remaining Crossover Corridor lacks habitat for Mexican spotted owl. The Crossover Corridor crosses approximately 2 mi (3.2 km) of the critical habitat proposed in 2000. This 2-mi (3.2-km) section is within the portion of the corridor that is common to the Central Corridor. At the time of the preparation of this EIS no critical habitat for Mexican spotted owl exists in the Crossover Corridor.

USFS Sensitive Species. Forty-three USFS Sensitive Species were identified as potentially occurring in, or within 3 mi (4.8 km) of the Crossover Corridor (HEG 2003c). In addition to those species listed above under Section 3.3.3.2, three-nerved scurf-pea potentially occurs in the Crossover Corridor. A description of these species and habitat requirements can be found in the Biological Assessment for the Crossover Corridor, Appendix F.

BLM Sensitive Species. BLM Sensitive Species are identical to those addressed in Section 3.3.3.1 (HEG 2003c).

Wildlife of Special Concern In Arizona. Wildlife of Special Concern in Arizona species potentially occurring in the Crossover Corridor are identical to those addressed above in Section 3.3.3.1 (HEG 2003c).

Arizona Department of Agriculture Plants. The six ADA plants listed under Section 3.3.3.2 may also occur in the Crossover Corridor (HEG 2003c).

3.3.4 Migratory Birds and Raptors

The *Migratory Bird Treaty Act* of 1918 (MBTA) governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over-utilization. Section 704 of MBTA states that the Secretary of the U.S. Department of Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take. The Secretary in adopting regulations is to consider such factors as distribution and abundance to ensure that take is compatible with the protection of the species (SWCA 2002a). Raptors are birds of prey including various types of hawks, falcons, eagles, vultures, and owls. Most raptors occurring in the study area are covered under MBTA.

Potential impacts of the proposed project on birds protected under the MBTA (migratory birds) were evaluated for all of the action alternatives (SWCA 2002a). This evaluation included a review of the migratory birds potentially occurring within the entire length of all of the corridors by habitat type preference.

There are no designated Important Bird Areas (IBA) within the proposed corridors. IBAs are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds (Audubon 2001). IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected.

The nearest IBA is the proposed Lower San Pedro River IBA, which is over 45 mi (72 km) east of the Central Corridor. There is no important link between the bird communities that may encounter the proposed project corridors and those that inhabit the San Pedro River area. It should be noted, however, that the Santa Cruz River Valley retains many of the characteristics of the San Pedro River, especially in reaches of the Santa Cruz River that currently receive treated sewage effluent (approximately 2 mi [3.2 km] east of the Central Corridor). For this reason, this feature may serve migratory birds in a similar manner to the San Pedro River.

Other features that are important to migratory birds include stock tanks, springs, and cliffs. Field surveys prior to the final design of the selected route could allow avoidance of these features.

3.3.4.1 *Western, Central, and Crossover Corridors*

Table 3.3–9 lists migratory birds expected to occur regularly in the Western, Central, and Crossover Corridors. It is possible that any migratory bird listed under the MBTA could occur in these corridors because of the high degree of mobility of birds.

3.3.5 Coronado National Forest Management Indicator Species

An MIS Analysis and Report for the proposed project considered 48 MIS[1] (SWCA 2002b), within 7 designated Management Indicator Groups (indicator groups) (some of these species occur in more than one group). Potential impacts to species that are currently listed or are under consideration for listing by

[1] The USFS is charged with preserving and enhancing the diversity of plants and animals consistent with the overall multiple use objectives. To accomplish this, MIS are selected "because their population changes are believed to indicate the effects of management activities" (36 CFR 291.19 [a][I]).

USFWS were analyzed in Biological Assessments prepared by Harris Environmental Group (HEG 2003a, 2003b, 2003c).

The list of MIS is the same for the three proposed alternatives; the alternatives differ in terms of MIS analysis only in terms of the amount of national forest lands and corresponding MIS habitat that has the potential to be altered. Table 3.3–10 provides a brief summary of the potential MIS habitat that is present within each of the corridors. MIS habitat is only defined and analyzed for national forest lands.

Table 3.3–9. Bird Species Listed Under the Migratory Bird Treaty Act that are Likely to Occur in the Western, Central and Crossover Corridors by Vegetation Type. [a]

Vegetation Type	Species
Sonoran Desertscrub	Harris' hawk, elf owl, Gila woodpecker, verdin, cactus wren, curve-billed thrasher, black-throated sparrow great-horned owl, red-tailed hawk, phainopepla, verdin, Lucy's warbler, and black-tailed gnatcatcher
Semidesert Grassland	Swainson's hawk, prairie falcon, loggerhead shrike, grasshopper sparrow, Savannah sparrow, lark bunting and western kingbird
Madrean Evergreen Woodland	Arizona woodpecker, Mexican jay, bridled titmouse, Hutton's vireo, and black-throated gray warbler
Sonoran Deciduous Riparian Forest	yellow-billed cuckoo, violet-crowned, Lucifer, broad-billed, and blue-throated hummingbirds; zone-tailed, gray hawk, and black hawks; yellow-billed cuckoo; Mississippi kite; sulphur-bellied flycatcher; cliff swallow; yellow warbler; Bullock's oriole; summer tanager; rose-throated becard; and elegant trogon

[a] This list is not comprehensive, but is provided to indicate the diversity of birds potentially occurring in the corridors.

Table 3.3–10. USFS Management Indicator Species by Group in the Coronado National Forest, Arizona.

Cavity Nesters	**Primary Cavity Nesters**	**Other Secondary Cavity Nesters (cont.)**
	Elegant Trogon	Cordilleran flycatcher
	Sulphur-bellied Flycatcher	Dusky capped flycatcher
	Acorn woodpecker	Ash-throated flycatcher
	Gila woodpecker	Brown-crested flycatcher
	Ladder-backed woodpecker	Violet-green swallow
	Hairy woodpecker	Bridled titmouse
	Arizona (Strickland's) woodpecker	Juniper titmouse
	Northern flicker	Red-breasted nuthatch
	Other Secondary Cavity Nesters[a]	White-breasted nuthatch
	American kestrel	Pygmy nuthatch
	Flammulated owl	Brown creeper
	Western screech owl	Bewick's wren
	Whiskered screech owl	House wren
	Northern pygmy-owl	Eastern bluebird
	Elf owl	European starling
	Mexican spotted owl	Lucy's warbler
	Eared trogon	

Table 3.3–10. USFS Management Indicator Species by Group in the Coronado National Forest, Arizona (*continued*).

Riparian Species	Gray Hawk Blue-throated Hummingbird Elegant Trogon Rose-throated Becard Thick-billed Kingbird	Sulphur-bellied Flycatcher Northern Beardless-Tyrannulet Bell's Vireo Black Bear
Species Needing Diversity	White-tailed Deer Merriam's Turkey Elegant Trogon	Sulphur-bellied Flycatcher Buff-breasted Flycatcher Black Bear
Species Needing Herbaceous Cover	White-tailed Deer Montezuma quail Pronghorn Antelope	Baird's Sparrow Desert Massassauga
Species Needing Dense Canopy	Bell's Vireo Northern Beardless-Tyrannulet Gray Hawk	
Game Species	White-tailed deer Montezuma Quail Pronghorn antelope	Desert bighorn sheep Merriam's Turkey Black bear
Special Interest Species	Montezuma Quail Gray Hawk Blue-throated Hummingbird Elegant Trogon Rose-throated Becard	Thick-billed Kingbird Sulphur-bellied Flycatcher Buff-breasted Flycatcher Northern Beardless-Tyrannulet Five-striped Sparrow

[a] Primary cavity nesters are those bird species that excavate nesting holes into trees or columnar cacti. Secondary cavity nesters are those species that are unable to excavate nesting holes into trees or columnar cacti and must find existing cavities for breeding.

3.3.5.1 *Western Corridor*

The length of the Western Corridor within the Coronado National Forest is 29.5 mi (47.5 km). Under this alternative, approximately 460 acres (186 ha) of Madrean Evergreen Woodland and 260 acres (105 ha) of Semidesert Grassland that could be potential MIS habitats are located in the Western Corridor.

3.3.5.2 *Central Corridor*

The length of the Central Corridor within the Coronado National Forest is approximately 15.1 mi (24.3 km). Under this alternative, approximately 212 acres (85.8 ha) of Madrean Evergreen Woodland, 16 acres (6.5 ha) of Xeroriparian Mixed Scrub, and 0.2 acres (0.1 ha) of Deciduous Riparian that could be potential MIS habitats are located within the Central Corridor on national forest land.

3.3.5.3 *Crossover Corridor*

The length of the Crossover Corridor within the Coronado National Forest is approximately 29.3 mi (47.2 km). Under this alternative, a maximum of 365 acres (148 ha) of Madrean Evergreen Woodland and 345 acres (140 ha) of Semidesert Grassland that could be potential MIS habitats are located within the Crossover Corridor on national forest land.

3.3.6 Invasive Species

Under Executive Order (EO) 13112, Invasive Species (February 3, 1999), projects which occur on Federal lands or are federally funded must: "subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (1) prevent the introduction of invasive species; (2) detect and respond rapidly to, and control, populations of such species in a cost-effective and environmentally sound manner; (3) monitor invasive species populations accurately and reliably; and (4) provide for restoration of native species and habitat conditions in ecosystems that have been invaded." Invasive species are most likely to occur in areas that have existing disturbances to soil. None of the proposed corridors have been surveyed for the presence of invasive species.

3.3.6.1 *Western, Central, and Crossover Corridors*

Given the vast expanse of land in all of the corridors, it is likely that some invasive species listed in EO 13112 occur. The only invasive species identified on lands administered by USFS is tree of heaven. No noxious weeds listed under EO 13112 are known to occur on lands administered by BLM. However, BLM has identified that buffelgrass is considered as a noxious weed and is located on BLM land in all three proposed corridors.